5TH SEM./ COMMON /2024(W)

TH1 ENTREPRENEURSHIP AND MANAGEMENT & SMART TECHNOLOGY

Full Marks: 80 **Time- 3 Hrs**

Answer any five Questions including Q No.1& 2
Figures in the right hand margin indicates marks

1. Answer **All** questions 2 x 10

a. Classify entrepreneur.

b. What is the function of SIDBI?

c. Define ancillary and tiny units.

d. List out the principles of management.

e. What is IPR?

f. Write down the name of the personal protection equipment.

g. Define staffing and directing.

h. Why inventory management is needed?

i. Mention the application of IoT.

j. Write down four functions of production management.

2. Answer **Any Six** Questions 5 X 6

a. Explain the function of entrepreneur.

b. Give brief description of the detail project report.

c. With a neat diagram, explain the Maslow's hierarchy of needs.

d. Define entrepreneur. Write down the difference between entrepreneur and manager.

e. Discuss the qualities and functions of a leader.

f. What is Total Quality Management ? Explain the quality policy and quality management.

g. Write down the features of factories act, 1948.

Answer **Any Three** Questions

3. What are the levels of management in an Organization? Describe the function of each level. 10

4. Explain the process of manpower planning, recruitment selection process, method of testing and training & development. 10

5. What are the barriers to entrepreneurship? Explain them briefly 10

6. Describe the process of identification of business opportunities. 10

7. Discuss the different types of marketing techniques. 10

5TH SEM./ETC & COMM./ E & TC./ 2024(W)

TH2 VLSI & Embedded System

Full Marks: 80 **Time- 3 Hrs**

Answer any five Questions including Q No.1& 2
Figures in the right hand margin indicates marks

1. Answer **All** questions 2 x 10

   a. What is parasitic capacitance?

   b. State the difference between enhancement mode and depletion mode transistor.

   c. Define turn around time.

   d. Write down the two uses of polysilicon in MOS transistor.

   e. What is watchdog timer?

   f. List out the applications of DRAM and SRAM.

   g. State the advantages of CMOS inverter over other inverters.

   h. What is photoresist ? Classify it.

   i. Draw the stick diagram of CMOS inverter.

   j. Define layout design rules.

2. Answer **Any Six** Questions 5 x 6

   a. Derive the drain current using channel length modulation method.

   b. What is flash memory? Explain the working of flash memory.

   c. Explain the basic concept of Arduino microcontroller.

   d. With neat diagram explain the working of clocked SR latch.

   e. Draw the Y chart and explain steps of each domain.

   f. Discuss the basic steps of fabrication.

   g Write a short note on oxide related capacitance.

Answer **Any Three** Questions 3 x 10

3. Describe the structure and operation of NMOS enhancement type. 10

4. With neat diagram describe the circuit operation of CMOS inverter with its VTC curve. 10

5. Define DRAM. Explain the construction and operation of DRAM. 10

6. Draw the step wise diagrams of CMOS fabrication process by n-well on P-substrate with brief explanation. 10

7. Describe the working of digital camera with neat diagram. 10

5TH SEM./EEE./EE(INST. & CONT.)/ETC & COM./E & TC/ 2024(W)

TH3 ANALOG & DIGITAL COMMUNICATION

Full Marks: 80 **Time- 3 Hrs**

Answer any five Questions including Q No.1& 2
Figures in the right hand margin indicates marks

1. Answer **All** questions 2 x 10

a. What is the need of modulation?
b. Draw the modulated waveforms of PAM and PWM.?
c. What is VSB modulation?
d. What is the difference between linear modulation and over modulation?
e. Determine the bandwidth required for an FM signal having frequency of 4 KHz with maximum deviation of 6 KHz.
f. Define selectivity and fidelity of a receiver.
g. Mention the corrective measures to be taken to avoid aliasing during sampling.
h. State Nyquist rate.
i. Write down two advantages of using Quadrature Amplitude Modulation (QAM)?
j. Write Shannon's theorem.

2. Answer **Any Six** Questions 5 X 6

a. A modulating signal $m(t)=10\ Sin(2\pi\times10^3t)$ is amplitude modulated with a carrier signal $c(t)=20\ Sin(2\pi\times10^4t)$. 1 X 5
Find out
(i) percentage modulation,
(ii) frequencies of the sideband components,
(iii) bandwidth of modulated signal,
(iv) the total power required to transmit AM wave if the carrier power is 200 Watt,
(v) the total sideband power.
b. Explain the operation of square law detection of AM waves.
c. Differentiate FM and PM.
d. Explain the working of AM super heterodyne receiver.
e. What is sampling? Explain different sampling techniques in brief
f. What is TDM? Explain its operation with block diagram.
g What is spread spectrum communications? Compare between frequency hopped spread spectrum (FH-SS) and Direct sequence spread spectrum (DS-SS) technique.

Answer **Any Three** Questions

3. Explain the generation of DSB-SC signal using Ring modulator with proper circuit diagram. 10
4. Explain the operation of Armstrong method of FM generation with suitable block diagram. 10
5. Explain the generation and detection of PCM system with block diagram. Write few of it's applications. 10
6. Explain the generation and detection of binary ASK signal. 10
7. Write short notes on: (a) QPSK 5+5
(b) T-1 carrier system

5TH SEM./EEE./ELE(INST & CONT.)/ETC & COMM./E & TC/2024(W)

TH4 Wave Propagation & Broadband Communication Engineering

Full Marks: 80 **Time- 3 Hrs**

Answer any five Questions including Q No.1& 2
Figures in the right hand margin indicates marks

1. Answer **All** questions 2 x 10

a. Define the following terms:
   (i) Critical Frequency
   (ii) Skip Distance

b. Name two directional antennas.

c. Mention the primary and secondary colors in a color TV signal.

d. State the dominant modes for TE and TM waves in a rectangular waveguide.

e. Write any two applications of Cavity Resonator.

f. List out the effects of environment on Electromagnetic Waves.

g. Define Aspect Ratio with two examples.

h. Draw the equivalent circuit of a Transmission Line.

i. Define VSWR of a transmission line. Write it's value for a perfectly matched match condition.

j. Name the primary constants of a transmission line.

2. Answer **Any Six** Questions 5 x 6

a. State Maxwell's Equation in Integral and Differential form with its significance.

b. A Transmission line having 50 Ohms is terminated in a load of (40+j30) Ohms. Calculate the VSWR.

c. List out the operating regions of a Tunnel Diode with proper V-I characteristics curve.

d. Define Scanning. Explain the need of vertical scanning in addition to horizontal scanning.

e. What is Ionosphere? Justify how the electron density in the ionosphere varies with height.

f. Compare waveguides and transmission lines on the following factors(Any Two) 2.5x2
   a) Frequency limitations b) Attenuation
   c) Spurious radiation d) Power handling capacity

g. Explain the working principle of Circulator with a neat sketch.

Answer **Any Three** Questions

3. Explain the function of each block of TV Transmitter with suitable diagram . 10

4. Describe the operation of a Horn antenna .Mention its advantages, disadvantages and applications. 10

5. With a neat diagram, describe the working principle of Travelling Wave Tube. Mentions its advantages, disadvantages and applications. 10

6. Briefly discuss about the components and network architecture in Broadband Communication System. 10

7. Write short notes on: (a) ISDN (b) SONET 5+5

5TH SEM./ELE. & MECH./EEE./ ELECTRICAL/EE(INST. & CONT.)/ ETC & COM./ E &TC. / 2024(W)

TH5 Power Electronics & PLC

Full Marks: 80 **Time- 3 Hrs**

Answer any five Questions including Q No.1& 2
Figures in the right-hand margin indicate marks

1. Answer **All** questions 2 x 10

a. Write down the firing i.e., triggering methods.
b. What are the advantages of using a freewheeling diode in a rectifier circuit?
c. What do you mean by duty cycle?
d. Write some applications of cyclo-converter.
e. Draw the symbol for NO, NC, Input &Output coil.
f. State the classification of inverters.
g. What is SMPS and why it is preferred in comparison to linear regulators?
h. Define commutation & why it is essential.
i. Write down two factors affecting the speed of the AC motors.
j. State the advantages of PLC.

2. Answer **Any Six** Questions 5 X 6

a. Explain the static V-I characteristics of SCR.
b. Explain briefly different turn-on methods of SCR.
c. Design a snubber circuit and state where it is used.
d. Explain the working of the series inverter.
e. Explain how a half-wave converter works with an RL load and show the output waveforms.
f. Briefly explain the control strategies of the chopper.
g. Draw the ladder diagrams of AND, OR, NAND, and EX-OR gates.

Answer **Any Three** Questions

3. Explain the operation of UJT & also justify how it can be used as a relaxation oscillator. 10
4. Explain how a 1-phase step-down cyclo-converter works with neat waveform. 10
5. Explain the working principle of UPS with a neat block diagram & state its application. 10
6. Explain the working principle of the step-down chopper with suitable waveforms and also derive the expression of average output voltage. 10
7. Explain different parts of PLC by drawing the block diagram and the purpose of each part of PLC. 10